Cast Polymer Body of Knowledge

Module 1: Basic Composites Knowledge/Overview of Cast Polymers (10%)

1. Production processes
2. Matrix and materials
3. Industry introduction
4. Understanding unique characteristics of cast polymers
5. Advantages of cast polymers
6. Cast polymer history
7. Reinforced composites manufacturing processes
8. Cultured marble molding
9. Solid surface molding
10. Engineered stone
11. Polymer concrete casting

Module 2: Cast Polymer Plant Safety (15%)

1. Shop/plant safety basics
2. Chemical, fire, fluid handling, electrical safety
3. Power tool safety, lock out tag out
4. Lift truck safety, manual lifting, compressed air
5. Safety in handling MEKP
6. General housekeeping and safety

Module 3: Cast Polymer Materials (15%)

1. The cast polymer matrix
2. Thermoset resins- polyester and vinyl ester
3. Initiators, promoters, inhibitors, additives
4. Gel coat/In mold coating
5. Cultured marble, onyx, granite, cast concrete, cast resin
6. Functional fillers and cast polymers/particle theory

Module 4: Gel Coat Application (10%)

1. Mold preparation and release application
2. Gel coat safety
3. Gel coat technology and application methods
4. Controlled Spraying definitions, overspray containment
5. Spray gun setup and calibration, measuring gelcoat, quality control of gel coat
6. Summary of controlled spraying benefits
7. Gel coat spraying techniques, guns, checklist

Module 5: Matrix Casting Techniques (30%)

1. Casting technology, temperature, measuring, veining, mixing
2. Casting techniques
3. Vibration
4. Demolding and finishing
5. Troubleshooting fillers and matrix systems
6. Solid surface application processing, cure
7. Renewing and repair techniques
8. Measuring, batching, documentation, samples
9. Trim and finish processes
10. Line setup- hand and automated casting

Module 6: Fabrication Techniques and Equipment Principles (10%)
1. Plural component application equipment 2. Plant compressed air system 3. Automated casting equipment 4. Fluid pumps and initiator delivery, operation 5. Equipment calibration, maintenance
Module 7: Quality Assurance and Finishing (10%)
1. The approach to quality 2. Quality in cast polymer and solid surface 3. Standards for finishing care and maintenance 4. Quality assurance system vs quality control 5. Management roles in quality 6. Building a quality system, Lean, Six-Sigma quality terminology 7. Procedural quality control, batch documentation